

## REMARKS

### Specification Amendments

The examiner alleges that the specification fails to provide proper antecedent basis for certain claimed subject matter. Action, p. 2. In particular, the Examiner alleges that there is no antecedent basis for the following claim terms:

Claims 29 and 37: "member with air supply holes"<sup>1</sup>

Claim 43: "annular device"

Claim 52: "annular plate"

Claims 31 and 46: "array of openings disposed in a circumferential band"<sup>2</sup>

While Applicants disagree with the objections to the specification, as explained in the Appeal Brief submitted 19 June 2009, Applicants have amended the specification to include the exact and literal claim language provided in the claims. Applicants note that these amendments are not required pursuant to the MPEP and thus are merely trivial amendments made to expedite prosecution of the case. Accordingly, Applicants request withdrawal of the corresponding specification objection.

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<sup>1</sup> Note that claim 37 has slightly different claim language. Claim 37 requires "air supply holes in a member disposed within the housing.

<sup>2</sup> Note that claim 46 has slightly different claim language. Claim 46 requires "an array of openings in a circumferential band." Further, Figs. 2 and 9 each show a "side view" of the apparatus, while Figs. 1 and 12 clearly show a substantially circular apparatus. Thus, one of ordinary skill in the art understands that the claimed openings are disposed in a circumferential band. See, spec, p. 6 line 33 through p. 7 line 9 and Figs. 1, 2, 9, and 12. Thus, the specification's description read in connection with the figures clearly show an "array of openings disposed in a circumferential band."

### **Claim Amendments**

Claims 45 and 51 have been canceled.

Claims 25, 41, and 43 have been amended. Support for these amendments is found throughout the specification and drawings, see, e.g., ¶ [31] and Figs. 1-2. These amendments find clear support either in the written description and/or the drawings. None of these amendments introduce new matter.

### **§ 103 Rejections**

Independent claims 25, 34, and 41 stand rejected under § 103 as being unpatentable over U.S. Patent No. WO/02/24306 (Boye) in view of U.S. Patent No. 5,053,130 (Raff). Claim 25 requires "a density control plate...disposed within the housing below the water guide jacket for increasing a density of the fibers below the water guide jacket and for generally inhibiting the water from flowing downwardly in a direction toward the air inlet." Similarly, claim 34 requires "a density control plate for increasing the density of the fibers in an area of the cavity between the water inlet and the air inlet and wherein the increased density of the fibers generally inhibits the water from flowing in a direction from the water inlet towards the air inlet." Claim 41 requires "increasing the density of a plurality of flexible fibers extending within the treatment cavity in an area below the water guide jacket using a density control plate to inhibit the water from flowing downwardly in a direction toward the air inlet." By increasing the density of the fibers disposed within the density control plate, water entering the apparatus through the water guide jacket is inhibited from flowing downward. See, ¶ [0045].

In rejecting the above claims, the Examiner acknowledges that Boye does not disclose the claimed density control plate disposed below the water guide jacket, but cites Raff's ring 6b as analogous to the claimed density control plate. See, Office Action, p. 8. However, Raff's ring 6b is not a density control plate. Nothing in Raff describes that ring 6b controls the density of the fibers to inhibit the water from flowing in a downward direction, as claimed. Instead, Raff's ring 6b provides a reduced attachment between the wall 3b and the housing 2b to prevent cracks in the end wall and the housing 2b when the filtration device is cured. For example, Raff states that "ring member has a coefficient of adhesion in relation to the end wall which is lower than the coefficient of adhesion in relation to the housing. As a result, the structural integrity of the housing and the seal created by the end wall is enhanced and the risk of cracks therein is substantially eliminated." Raff, col. 2, lines 17-25. Further, no other portion of Raff describes ring 6b as a density control plate that inhibits the flow of water in a particular direction. In order to properly read on the claimed invention, the examiner must point to a density control plate - not just *any* annular plate - disposed below a water guide jacket. That is, the examiner must point to a density control plate that actually controls the density of the fibers in the filtration device. For at least this reason, no pending claims are rendered obvious over the cited art.

Further, the examiner's motivation to modify Boye in view of Raff fails to set forth a *prima facie* case of obviousness. The examiner states that it would be obvious to modify Boye so that a density control plate is disposed below a water guide jacket since Raff teaches that such "modification [will] enhance the structural integrity of the fiber's seal and substantially eliminate the risk of cracks." Action, p. 9. However, the examiner

has not shown how merely placing a density control plate below Boye's alleged water guide jacket will enhance structural integrity or eliminate cracks. Raff does not simply teach that placing a ring below the alleged water guide jacket (expanded portion 7b of the housing). Instead, Raff describes that a ring 6 is placed between the end walls 3 and the housing 2,7. Raff, col. 1, lines 55-62. The ring reduces the strength of the attachment between the end walls 3 and the housing 2,7 and thus, purportedly reduces cracking when the filtration device is cured. Thus, merely placing Raff's ring (or the other alleged density control plates in Boye) below the alleged water guide jacket in Boye would not necessarily reduce cracking to the filtration device in Boye. Rather, to prevent cracking, as taught by Raff, the ring must be placed between an end wall and the housing. As described in the Action, the examiner alleges that the housing is shown by reference numeral 1 in Boye. However, the examiner has not identified any end wall in Boye that similar to that of Raff. Further, Boye does not appear to include an end wall that is not integrally formed with housing 1. Thus, it would be impossible to place a density control plate between an end wall and the housing 1 in Boye. For this additional reason, no pending claims are rendered obvious over the cited art.

Moreover, even assuming that one of ordinary skill in the art would place a density control plate between an end wall and the housing, as suggested by the examiner's modification of Boye, such a density control plate would not necessarily be disposed "below" the alleged water guide jacket in Boye, as required by the claims. Rather the alleged density control plate could be placed at any location along the length of the Boye filtration device between an end wall and the housing. Nothing in either reference requires that the alleged density control plate be placed between an end wall

and the housing and at a location below the alleged water guide jacket. For the above additional reasons, no pending claims are rendered obvious over the cited art.

Further, one of ordinary skill in the art would not be motivated to place a density control plate below the alleged water guide jacket in Boye because Boye expressly teaches placing the alleged density control plate above the alleged water guide jacket. For instance, Boye states that “[i]n order to obtain sufficient space for the deposited particles and in order to avoid early clogging of the filtering device, the jaws 7a/b, and thereby the location of the compressing 8 is preferably arranged so that about 2/3 of the length of the fibre housing is on the inlet side of the jaws 7a/b...” Boye, p. 12, lines 14-17. Thus, placing the alleged density control plate below the alleged water guide jacket, would position the alleged density control plate such that the deposited particles would clog the filtering device. Accordingly, Boye expressly teaches against placing a density control plate below the alleged water guide jacket. For this additional reason, no pending claims are rendered obvious over the cited art.

In addition, claim 25 requires a "header jacket including a clarified water outlet...[and] including a waste outlet." In addition, the claim requires that the "header jacket extend[] around a second end portion of the housing." In the Action, the examiner states that Boye includes this limitation "at the arrow exiting the filter device" in Fig. 1. Further, the examiner states that the waste outlet is shown in Fig. 2 before valve 62 and the clarified water outlet is shown in Fig. 2 before valve 65. However, these elements do not extend around an end portion of the housing 1. Instead, these elements are disposed downstream from the housing 1 and thus, cannot form part of the claimed header jacket. Moreover, as described below, nothing in Raff or the other

cited references have been shown to cure this defect. For this additional reason, claim 25 and its respective dependent claims define patentable subject matter over the cited art.

The examiner provides an alternative rejection for the limitation of claim 25 requiring the "header jacket including a clarified water outlet...[and] including a waste outlet." The examiner states that Raff allegedly discloses the claimed header jacket and finds that it would be obvious to have substituted the Boye's alleged header jacket for Raff's alleged header jacket "since it was known in the art to provide a clarified water outlet and a waste outlet in a filtering apparatus" (emphasis added). Action, p. 7. However, this motivation to modify Boye fails to set forth a *prima facie* case of obviousness. The motivation set forth by the examiner does not provide any rational underpinning to support a legal conclusion of obviousness. Merely stating that each claim limitation is allegedly found in several different prior art references does not support a §103 rejection. That is, merely because Raff allegedly discloses the claimed header jacket, does not necessarily mean that it would be obvious to combine the alleged header jacket into Boye's filtration device. Indeed, MPEP §2143.01 states that "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious..." In addition, "[a] statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art at the time the claimed invention was made' because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references." MPEP §2143.01 (emphasis omitted from

original). Instead, the examiner must set forth some articulated reasoning with a rational underpinning explaining why one of ordinary skill in the art would substitute the alleged header jacket in Boye for the alleged header jacket in Raff. Since the examiner has failed to set forth any reason why one of ordinary skill in the art would modify Boye to include Raff's alleged header jacket, the §103 rejection fails as a matter of law. For this additional reason, claim 25 and its respective dependent claims define patentable subject matter over the cited art.

Further, one of ordinary skill in the art would not modify Boye to include Raff's alleged header jacket. As stated above, the examiner states that it would be obvious to include Raff's header jacket into Boye to provide Boye with a clarified water outlet and a waste outlet. However, Boye already has a clarified water outlet and a waste outlet. For example, on page 4 of the Action, the examiner identifies Boye's clarified water outlet as the "structure shown in Fig. 2, before valve 65...leading to filtered fluid container 70." Likewise, the examiner identifies Boye's waste outlet as the "structure shown in Fig. 2, before valve 62...leading to deposit container 60." Action, p. 4. Since Boye allegedly already contains these claim limitations, one of ordinary skill in the art would have no need to substitute Raff's header jacket into Boye's filtration device. For this additional reason, the suggested modification of Boye, fails to set forth a *prima facie* case of obviousness. Thus, claim 25 and its respective dependent claims define patentable subject matter over the cited art.

Claim 30 requires "an array of air supply holes disposed in a media fixing plate." Similarly, claim 41 requires "injecting air from the air inlet into the treatment cavity through openings disposed in a media fixing plate." The examiner acknowledges that

neither Boye nor Raff discloses the above limitation. Thus, the examiner cites Zha for this teaching and suggests that it would be obvious to "to have located air supply holes in the Boye media fixing plate, as taught by Zha...since Zha...states...that such a modification would provide an 'apparatus for cleaning a membrane module' where liquid and gas 'bubbles entrained therein move past the surfaces of the membranes to dislodge fouling materials therefrom." Action, p. 18. However, this motivation to combine references fails to set forth a *prima facie* case of obviousness. One of ordinary skill in the art would not modify Boye to include Zha's air supply holes in the media fixing plate because Boye already describes several ways to dislodge fouling materials from the membranes. For example, on page 18 of the Action, the examiner states that Boye allegedly discloses "an array of air supply holes within a plate in Fig. 3, where, '[t]he liquid or fluid may pass from the inlet(s) through the mounting 310....along the fibre-head...and then enter into the bundle of fibres along the outer side of the bundle 302.'" Further, the examiner states that in Boye's Fig. 2, "the inlet 66 may be used for injecting or conducting a liquid, air or a gas into the system to be used for a flushing process." Thus, the examiner cites two different ways that Boye describes cleaning the membranes in the filtration device. The examiner never states why it would be obvious to place Zha's air supply holes in the claimed location - the media fixing plate, as required by the claim. The examiner only states why it would be obvious to include air supply holes (which Boye allegedly already contains in Fig. 3) in Boye's device. Further, since Boye already contains a way to clean the membranes, one of ordinary skill in the art would have no need to substitute Zha's air supply holes in Boye's media

fixing plate to clean the membranes. For this additional reason, claims 30 and 41 define patentable subject matter over the cited art.

Respectfully submitted,  
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